

NON-PUBLIC?: N  
ACCESSION #: 8808310037  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Braidwood, Unit 2 PAGE: 1 of 4

DOCKET NUMBER: 05000457

TITLE: Manual Reactor Trip Due to Approaching Low Low Steam Generator Levels as a Result of Instrument Air Valve Mispositioning by Person or Persons Unknown

EVENT DATE: 07/24/88 LER #: 88-019-00 REPORT DATE: 08/19/88

OPERATING MODE: 1 POWER LEVEL: 074

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION 50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:  
NAME: Cheryl A. Melone, Tech Staff Engineer  
TELEPHONE #: 815-458-2801 Ext. 2400

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: At 1431 on July 24, 1988, the reactor was manually tripped due to decreasing steam generator levels. The 2A and B Auxiliary Feedwater Pumps auto started on lo lo steam generator levels. Cause of this event is attributed to mispositioning of an Instrument Air (IA) isolation valve in the 90% closed position as opposed to its correct position of 100% open. This valve supplies IA to various heater drain valves and controllers. It is strongly suspected by physical evidence and a re-enactment of the path taken by the contractor working in the area that the valve could have been unknowingly mispositioned. Immediate corrective actions were to recover steam generator levels and establish stable conditions. The 25 and 26 heaters normal and emergency drain valves were stroked to ensure operability. The normal and emergency level controllers for the 25, 26, and 27 heaters were checked and no problems were found. A check of the instrument air valves in the Turbine Building in areas of ongoing work was made with no mispositioned valves found. This is considered an isolated event since scaffolding was needed for insulation work in the area of the valve. There has been no previous occurrences of a mispositioned valve resulting in a reactor trip due to person or persons unknown.

(End of Abstract)

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#### A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: Braidwood 2; Event Date: July 24, 1988; Event Time: 1431  
MODE: 1 - Power Operations; Rx Power: 74%;  
RCS (AB) Temperature/Pressure: NOT/NOP

#### B. DESCRIPTION OF EVENT:

There were no systems or components inoperable at the beginning of the event which contributed to the severity of the event. The 2A and 2B heater drain (SN) pumps, the 2B, 2C, and 2D condensate/condensate booster pumps (CD/CB) (SD) and the 2B and 2C Feedwater Pumps (FW) (SJ) were operating.

The heater drain system routes the drainage of the feedwater heater strings and the Moisture Separator Reheaters (MSR) (SN) back to the CD/CB and the FW system. The high pressure heater strings and MSR drain tanks route their drainage to the heater drain tank. The heater drain tank is then used to provide approximately 33% of the total required FW flow. The emergency drain valves all fail open on the high pressure heater string with the exception of the 26 heater which fails "As Is".

Prior to the reactor trip, several heater drain emergency drain valves were oscillating. The 26B heater emergency drain valve failed to respond to a hi heater level. A Shift Foreman was dispatched to troubleshoot the valve and found it was stuck closed. The valve was opened and appeared to be operating normally.

Another perturbation occurred in the 26B feedwater heater causing the level to increase to a hi level alarm condition which caused the normal drain valve to go fully open. The level continued to rise which caused the emergency drain valve to open as designed. The level continued to increase to the hi-hi level alarm condition because the emergency drain valve again failed to open. The normal drain valve for the 27B heater closed in response to the 26B heater hi-hi level. This caused the level to rise in the 27 heater to the hi level alarm condition. The 27B emergency drain valve cycled in response to the change in level. The level swings became more pronounced which resulted in an instrument air usage greater than that experienced during the earlier perturbation.

The heater normal and emergency drain valves shifted to their respective loss of air positions. This caused heater drain flow to be diverted

to the main condenser from the heater drain tank. When heater drain tank reached the lo-lo level trip point, the heater drain pump discharge valves went closed which reduced the suction to the feedwater pumps. Additionally, the perturbation in the heater drain system caused the condensate pump suction strainer differential pressure to increase.

The fourth CD/CB pump was started in an attempt to maintain feedwater flow to the steam generators.

At 1431 on July 24, 1988, the reactor was manually tripped due to decreasing steam generator levels (JB). The 2A and 2B Auxiliary Feedwater (BA) pumps auto started on low low steam generator levels.

Operator actions decreased the severity of this event since the heater was manually tripped prior to any Engineered Safety Features (ESF) (JE) actuation.

This event is being reported pursuant to 10CFR50.73(a)(2)(iv) - Any event or condition that resulted in manual or automatic actuation of any engineered safety feature, including the reactor protection system.

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#### C. CAUSE OF EVENT:

The cause of this event is attributed to mispositioning of an Instrument Air (IA) (LD) Isolation Valve in the 90% closed position as opposed to its correct position of 100% open. This valve supplies instrument air to the following valves and controllers:

- 1) First stage reheat drain valve to 25 heaters,
- 2) 25B heater level control,
- 3) 26 heaters emergency drain valves and controller,
- 4) 27 heaters emergency drain valves, and
- 5) The 26B heater drain valve to the 25B heater.

This caused air to be "throttled" to the above heater drain components.

It is strongly suspected by physical evidence and a re-enactment of the path taken by the contractor working in the area that the valve could have been unknowingly mispositioned.

In addition the instrument air regulator for 2HD122, emergency make-up valve, was found isolated and the air regulator drain valve was found open. This rendered the emergency make-up valve from the condensate booster system inoperable. This is a separate case from that explained

above. This regulator is located near the make-up valve which is in plain view and therefore was not mispositioned due to the ongoing work near the other instrument air isolation. The exact cause of why this was mispositioned is not known. The regulator was returned to its normal line-up.

If this valve was in an operable state throughout this event, the results would have been the same.

#### D. SAFETY ANALYSIS:

There was no affect on plant or public safety as all engineered safety features operated as designed.

Under worst case conditions of the plant operating at 100% power with a design basis loss of feedwater, there would be no impact on the safety of the plant or public since this is enveloped in the Final Safety Analysis Report (FSAR). The Auxiliary Feedwater System remained operable throughout this event.

#### E. CORRECTIVE ACTIONS:

The immediate corrective actions were to recover steam generator levels and establish stable conditions. The following corrective actions were taken to assure system operability:

1. The instrument air valves were returned to their normal position of 100% open.
2. The 25A & B heaters and the 26A & B heaters normal and emergency drain valves were stroked to ensure operability.
3. The normal and emergency level controllers for the 25A & B, 26A & B, and 27A & B heaters were checked and no problems were found.
4. A check of the instrument air valves in the Turbine Building in areas of ongoing work was made with no mispositioned valves found.

This is considered an isolated event since scaffolding was needed for insulation work in the area of the valve. This valve is normally not accessible during routine operations. No further corrective actions are necessary.

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#### F. PREVIOUS OCCURRENCES:

There has been no previous occurrences of a mispositioned valve resulting in a reactor trip due to person or persons unknown.

G. COMPONENT FAILURE DATA:

This event was not caused by equipment failure nor did any components fail as a result.

ATTACHMENT # 1 TO ANO # 8808310037 PAGE: 1 of 1

Commonwealth Edison  
Braidwood Nuclear Power Station  
Route #1, Box 84  
Braceville, Illinois 60407  
Telephone 815/458-2801

BW/88-966

August 19, 1988

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Dear Sir:

The enclosed Licensee Event Report from Braidwood Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73(a)(2)(iv) which requires a 30 day written report.

This report is number 88-019-00; Docket No. 50-457.

Very truly yours,

/s/ R. E. QUERIO  
R. E. Querio  
Station Manager  
Braidwood Nuclear Station

REQ/AJS/jab  
(7126z)

Enclosure: Licensee Event Report No. 88-019-00

cc: NRC Region III Administrator

NRC Resident Inspector  
INPO Record Center  
CECo Distribution List

ATTACHMENT # 2 TO ANO # 8808310037 PAGE: 1 of 1

DEVIATION REPORT

FIGURE OMITTED - NOT KEYABLE (REPORT)

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